REMARKS

In the Office Action, claims 1-3, 6-13, 15-21, 23, 24, and 26-31 are pending in the case. The Examiner rejected all the claims under 35 U.S.C. §103(a) in view of U.S. Patent No. 5,369,757 to Spiro et al. (hereinafter "Spiro") and U.S. Patent No. 6,542,906 to Korn (hereinafter "Korn"). In view of previously entered amendments, Applicant respectfully submits that the pending claims are in condition for allowance.

REJECTION OF CLAIMS 1-3, 6-13, 15-21, 23, 24, and 26-31 UNDER 35 U.S.C. §103(a)

The Examiner rejected claims 1-3, 6-13, 15-21, 23, 24, and 26-31 under 35 U.S.C. §103(a) in view of Spiro and Korn. Applicant respectfully traverses this rejection.

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. *See* MPEP § 2142. To establish a *prima facie* case of obviousness, the combination of the prior art references must teach or suggest all the claim limitations. *See id.* Furthermore, even if all the claim limitations are taught or suggested, there must be some suggestion or motivation to combine reference teachings. *See id.*

In addition, any suggestion or motivation to combine references must be established by factual findings. "The factual inquiry whether to combine references must be thorough and searching. (quoting *McGinley v. Franklin Sports, Inc.* 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001)) It must be based on objective evidence of record." *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002). Furthermore, "[an] examiner's conclusory statements [the court quotes the conclusory statements] do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability..." *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002). The Examiner fails to provide objective evidence why these Spiro and Korn would be selected and why these references would be combined by one of ordinary skill in the art.

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Applicant respectfully asserts that Spiro and Korn fail to teach or suggest all the claim limitations of the independent claims 1, 11, and 21. Specifically, the references fail to teach or disclose "apply the *detail records* to the backup copy *during the read and restore* of the backup copy," "*determine the merge end point* reflective of a separation of *detail and spill records* in a log," or "derive detail records *in parallel* with the *read and restore* of the backup copy" as recited in claims 1, 11, and 21. The references fail to teach or disclose detail records, spill records, a merge end point, and derivation of detail records in parallel with reading and restoring a backup copy.

Representative claim 1 recites in part:

an image copy restore utility configured to apply the detail records
to the backup copy during the read and restore of the backup copy
to thereby create a restored database data set.

The Examiner asserts that this element is taught in Spiro at Col. 6, line 65- Col. 7 line 14. Applicant respectfully disagrees.

Spiro teaches recovery logging which uses snap shot files and orders buffer pool flushing in order to allow for recovery of volatile memory in the event of a system crash. Spiro involves moving of updated records to nonvolatile memory upon certain checkpoints instead of after every transaction. Updates to records between checkpoints are recorded in a log which may be read and applied to volatile memory to restore the state of the memory to the state before a system failure occurred. *See* Spiro Abstract. Specifically, Spiro teaches copying of updated records from a before-image log file in reverse chronological order to the non-volatile state memory.

Initially, Spiro appears to teach applying detail records to a backup copy as recited in the claims. However, the update records written in Spiro are not detail records. Spiro actually teaches away from the claimed invention.

Detail records as used in the claimed invention, and supported in the specification, are records of updates that have been committed to permanent storage. *See* Specification page 5, lines 19-21. In contrast, Spiro teaches that committed records are not applied to the non-volatile

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state memory. Spiro states that "only the updates of the uncommitted transactions need be copied to the non-volatile state memory." *See* Spiro Col. 7, lines 24-26.

Consequently, the update records in Spiro are not detail records. In addition, the non-volatile state memory is not a backup copy because writing only uncommitted updates, as taught by Spiro, would lead to a copy of the updates which cannot be absolutely determined to be free of inconsistencies. Applicant asserts that because "a *prima facie* case of obviousness may [also] be rebutted by showing that the art, ... teaches away from the claimed invention," claims 1, 11, and 21 are nonobvious in view of Spiro and Korn. MPEP §2144.05(III), *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

Furthermore, Applicant finds no teaching in Spiro concerning applying detail records to a backup *during* the read and restore of the backup copy, as recited in the claims. The claimed invention allows for both operations to be performed simultaneously. Spiro does not teach or disclose application of detail records during a read and restore operation concerning the backup copy. Claim 1 further recites the simultaneous nature of the invention with a change accumulation manager that "derive[s] detail records *in parallel* with the *read and restore* of the backup copy." The parallel operation saves time in completing a recovery. Applicant finds no teaching in Spiro or Korn for parallel or simultaneous derivation and application of detail records with reading and restoring of a backup copy. This is largely because Spiro does not discuss change accumulation datasets and Korn does not discuss detail records, as discussed below.

In addition, representative claim 1 recites in part:

...determine the merge end point reflective of a separation
of detail and spill records in a log.

The Examiner asserts that this element is taught in Korn at Col. 6, line 21-46. Applicant respectfully disagrees.

Korn teaches merging a sequence of delta files. The delta files define a series of changes between a base file and an updated file. The delta files allow the updated file to be returned to an earlier version by making the changes indicated by each delta file in the sequence until the desired earlier version is achieved. In order to conserve space, delta files are kept to a minimal size. Consequently, instead of copying all data from the base file or previous delta file

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to the current delta file, the delta file holds references or tokens to data in an earlier delta file or the base file. Tokens pointing to data that is reused or duplicated from a previous delta file are referred to as "reuse" token. Tokens that include unique or original data are designated as "unique" tokens in a delta file. The tokens store the unique data that has changed between versions, as well as the position of the data in the update file.

The Examiner asserts that Korn at Col. 6, line 21-46 teaches "a merge end point utility configured to determine the merge end point, the merge end point reflective of a separation of detail and spill records in a log." While Korn does relate to merging of data, the data merging that occurs in Korn is of a base file, one or more delta files, or an update file, not the merging of detail or spill records. Consequently, Korn does not determine a merge end point reflective of a separation of detail records.

Korn operates on a file structure. The actual content or structure of the file is irrelevant to operation of the merging of the two structures M and M' in Korn. Consequently, Korn treats the base file, delta files, and update file as a consecutive set of bytes of data. Korn is concerned with the changes between the files. Generally, delta files in Korn are generated using a differencing algorithm which divides the base file into changed and unchanged segments.

Korn is oblivious to the semantics of the data in the files. Korn is concerned with how the tokens relate to previous versions. Consequently, Korn makes no accounting for the actual content and structural organization of the data into records. Korn describes the merge structures as having tokens representative of changes in a plurality of delta files. See Korn Col. 5, lines 11-12, Col. 4, lines 56-58. As mentioned above, these token comprise pointers and original data, not records.

In contrast, the claimed invention determines a merge end point because the data in the log is comprised of records. Furthermore, certain records (detail records which are part of complete units of recovery) should be applied to a backup copy of the database, while other spill records (which are not part of complete units of recovery) should not be applied. By determining the merge end point, the claimed invention allows for selective application of detail records based on the actual content and structural organization of the data within the logs.

Applicant finds no merge end point in Korn as defined and supported in the claims and specification. Claim 1 recites that a merge end point is "reflective of a separation of detail and spill records in a log." A merge end point "is a point in time wherein updates may no longer be merged with the new database because all change records are not available for these updates. Thus, there is no guarantee as to whether these updates have been committed. Updates which cannot be merged with the new database are written to records which are termed 'spill records.'" *See* Specification page 5, lines 23-27. Therefore, the merge end point is related to the meaning of the data in the log. Korn relates to the differences between portions of the data in two different files regardless of the actual meaning of the data.

Claim 1 indicates that the merge end point is used to "derive updates subsequent to a merge end point." The claimed invention reviews the spill records to identify updates that together comprise complete units of recovery and can be applied to a backup copy of the database. Thus, the merge end point is a facilitating element of the claimed invention that is missing from Spiro and Korn.

Finally, even if Spiro and Korn could be interpreted as teaching a merge end point, change accumulation dataset, and detail records, Applicant submits that the Examiner has failed to provide any factual findings, evidence, as to why one of skill in the art would be motivated to even select the Spiro and Korn references, much less combine them. The Examiner asserts that it would have been obvious to modify Spiro to include a merge end point utility and a change accumulation manager as recited in the claims "in order to save time when reconstructing a version and space in the backup repository." Office Action page 3. Applicant respectfully disagrees.

Saving time and space in a backup repository is a worthless objective if the backup repository does not include consistent data. As discussed above, Spiro teaches copying of uncommitted updates to non-volatile memory instead of committed updates, referred to as detail records in the claims. If uncommitted updates were copied to a backup repository, inconsistent data would result. Applicant submits that Spiro teaches copying of uncommitted updates because Spiro is concerned with recovering the state of volatile memory up until a system failure. If updates have been committed, it would waste time and resources to restore these to

the volatile memory because they have already been stored in non-volatile memory. Therefore, one of skill in the art would not select Spiro and Korn because Spiro teaches away from the claimed invention.

As to the motivation to combine these references, the courts have held that "When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors)." *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

A conclusory statement that one of ordinary skill in the art would combine Spiro and Korn "in order to save time when reconstructing a version and space in the backup repository" does not present an articulate reason why one of ordinary skill in the art would be motivated to make such a combination. Applicant submits that such evidence is absent from the Office Action. Consequently, Applicant submits that the Examiner has not met the burden of proof to establish obviousness supported by a teaching, motivation, or suggestion to select and combine Spiro and Korn.

In view of the foregoing, Applicant submits that the application is in condition for immediate allowance. In the event any questions remain, the Examiner is respectfully requested to initiate a telephone conference with the undersigned.

Respectfully submitted,

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